

复合沟道 MOSFET

ELM53326CWSA-N

<http://www.elm-tech.com>

■概要

ELM53326CWSA-N 是低输入电容、低工作电压、低导通电阻的大电流 MOSFET。同时内藏有 N 沟道和 P 沟道的复合产品。

■特点

- | | |
|--|---|
| N 沟道 | P 沟道 |
| • $V_{ds}=30V$ | • $V_{ds}=-30V$ |
| • $I_d=12.0A$ | • $I_d=-8.0A$ |
| • $R_{ds(on)} = 36m\Omega (V_{gs}=10V)$ | • $R_{ds(on)} = 60m\Omega (V_{gs}=-10V)$ |
| • $R_{ds(on)} = 46m\Omega (V_{gs}=4.5V)$ | • $R_{ds(on)} = 80m\Omega (V_{gs}=-4.5V)$ |

■绝对最大额定值

如没有特别注明时, $T_a=25^\circ C$

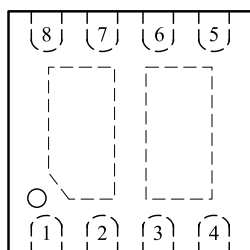
| 项目 | 记号 | N 沟道 (最大值) | P 沟道 (最大值) | 单位 |
|---------------------------------|------------------|------------|------------|------------|
| 漏极 - 源极电压 | V_{ds} | 30 | -30 | V |
| 栅极 - 源极电压 | V_{gs} | ± 20 | ± 20 | V |
| 漏极电流 (定常) ($T_j=150^\circ C$) | $T_a=25^\circ C$ | 12.0 | -8.0 | A |
| | $T_a=70^\circ C$ | 10.0 | -6.0 | |
| 漏极电流 (脉冲) | I_{dm} | 50 | -30 | A |
| 容许功耗 | $T_c=25^\circ C$ | 2.0 | 1.8 | W |
| | $T_c=70^\circ C$ | 1.5 | 1.2 | |
| 结合部温度 | T_j | 150 | 150 | $^\circ C$ |
| 保存温度范围 | T_{stg} | -55 ~ 150 | -55 ~ 150 | $^\circ C$ |

■热特性

| 项目 | 记号 | 沟道 | 典型值 | 最大值 | 单位 |
|--------------|-----------------|----|-----|------|--------------|
| 最大结合部 - 环境热阻 | $R_{\theta ja}$ | N | | 56.0 | $^\circ C/W$ |
| 最大结合部 - 环境热阻 | $R_{\theta ja}$ | P | | 62.5 | $^\circ C/W$ |

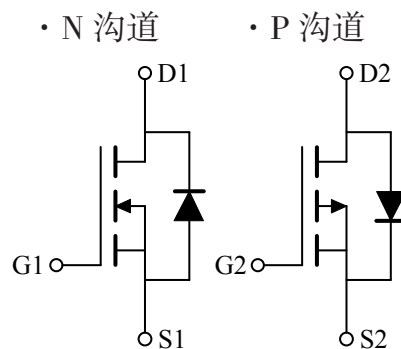
■引脚配置图

DFN8-3 × 3 (俯视图)



| 引脚编号 | 引脚名称 |
|------|---------|
| 1 | SOURCE1 |
| 2 | GATE1 |
| 3 | SOURCE2 |
| 4 | GATE2 |
| 5 | DRAIN2 |
| 6 | DRAIN2 |
| 7 | DRAIN1 |
| 8 | DRAIN1 |

■电路图



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■电特性 (N 沟道)

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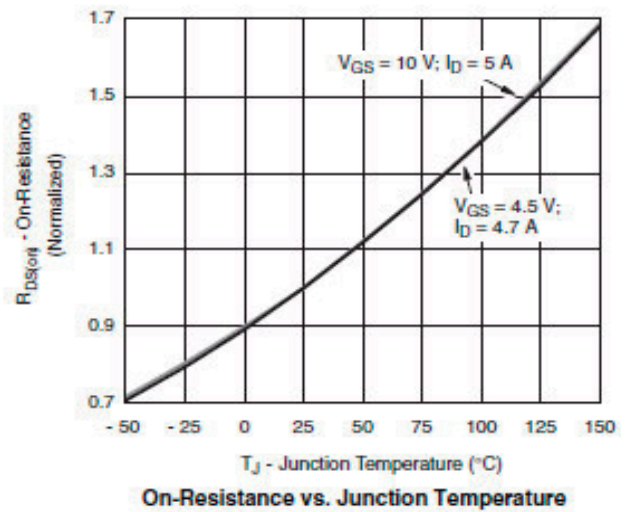
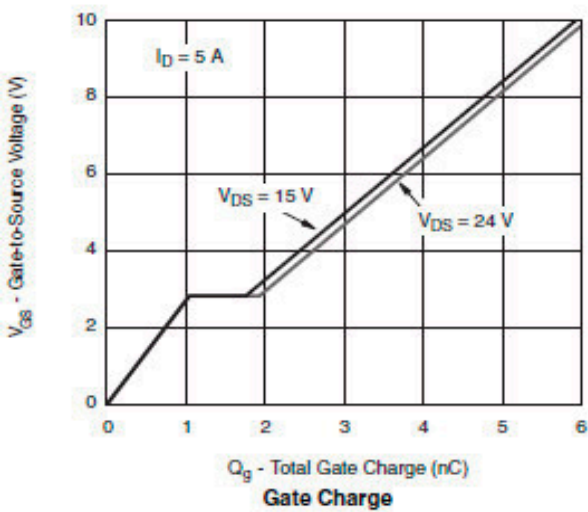
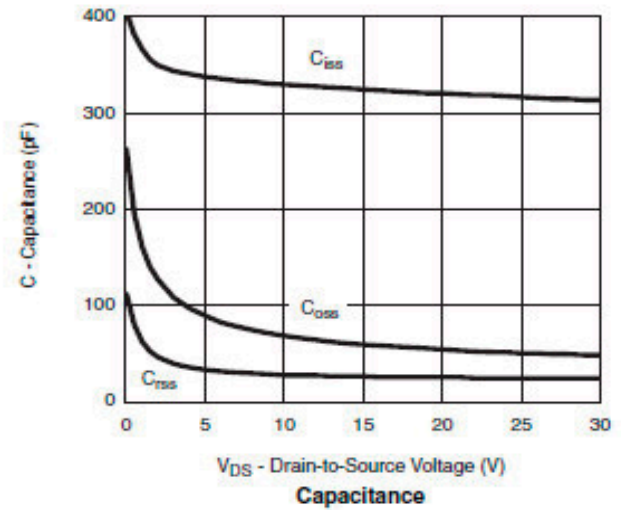
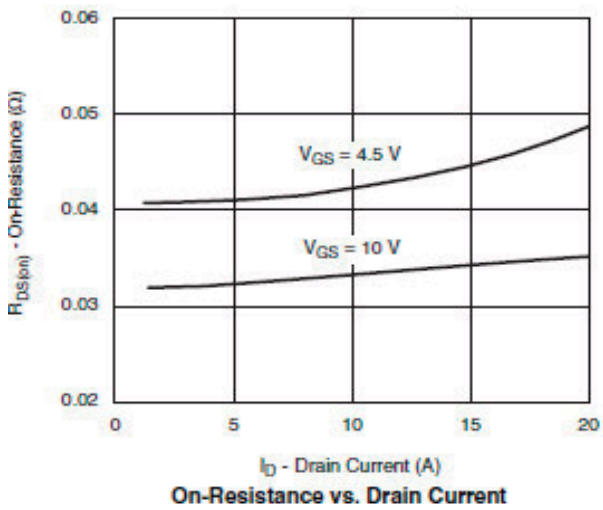
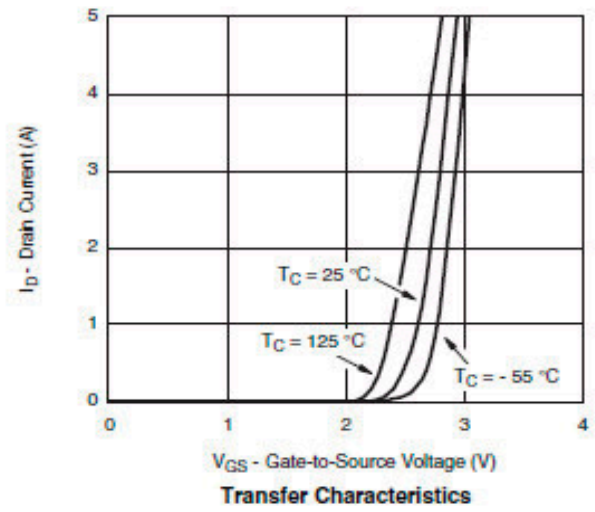
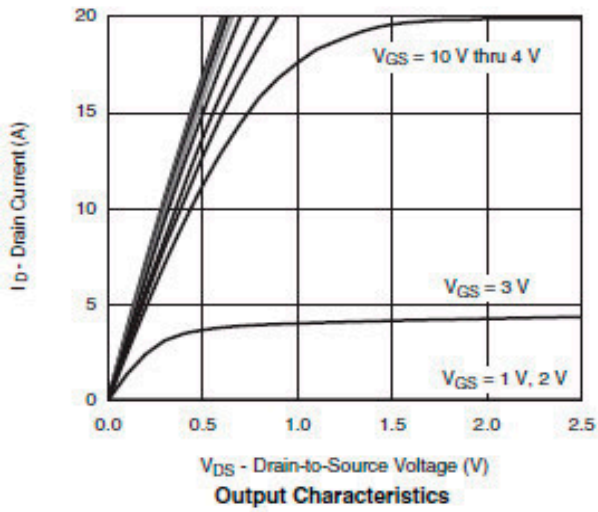
| 项目 | 记号 | 条件 | 最小值 | 典型值 | 最大值 | 单位 |
|-------------|---------|--|-----|-----|------|----|
| 静态特性 | | | | | | |
| 漏极 - 源极击穿电压 | BVdss | Id=250μA, Vgs=0V | 30 | | | V |
| 栅极接地时漏极电流 | Idss | Vds=24V, Vgs=0V Ta=85℃ | | | 1 | μA |
| | | | | | 30 | |
| 栅极漏电电流 | Igss | Vds=0V, Vgs=±20V | | | ±100 | nA |
| 栅极阈值电压 | Vgs(th) | Vds=Vgs, Id=250μA | 1.3 | | 2.1 | V |
| 导通时漏极电流 | Id(on) | Vgs=4.5V, Vds≥5V | 10 | | | A |
| 漏极 - 源极导通电阻 | Rds(on) | Vgs=10V, Id=12.0A | | 30 | 36 | mΩ |
| | | Vgs=4.5V, Id=10.0A | | 40 | 46 | |
| 正向跨导 | Gfs | Vds=15V, Id=5.2A | | 13 | | S |
| 二极管正向压降 | Vsd | Is=1.6A, Vgs=0V | | 0.8 | 1.3 | V |
| 寄生二极管最大连续电流 | Is | | | | 10 | A |
| 动态特性 | | | | | | |
| 输入电容 | Ciss | Vgs=0V, Vds=20V, f=1MHz | | 700 | | pF |
| 输出电容 | Coss | | | 75 | | pF |
| 反馈电容 | Crss | | | 45 | | pF |
| 开关特性 | | | | | | |
| 总栅极电荷 | Qg | Vgs=4.5V, Vds=20V, Id≐5.2A | | 8.0 | 12.0 | nC |
| 栅极 - 源极电荷 | Qgs | | | 1.6 | | nC |
| 栅极 - 漏极电荷 | Qgd | | | 2.4 | | nC |
| 导通延迟时间 | td(on) | Vgs=10V, Vds=15V, Id≐1.0A RL=15Ω, Rgen=6Ω | | 8 | 12 | ns |
| 导通上升时间 | tr | | | 12 | 18 | ns |
| 关闭延迟时间 | td(off) | | | 28 | 40 | ns |
| 关闭下降时间 | tf | | | 10 | 18 | ns |

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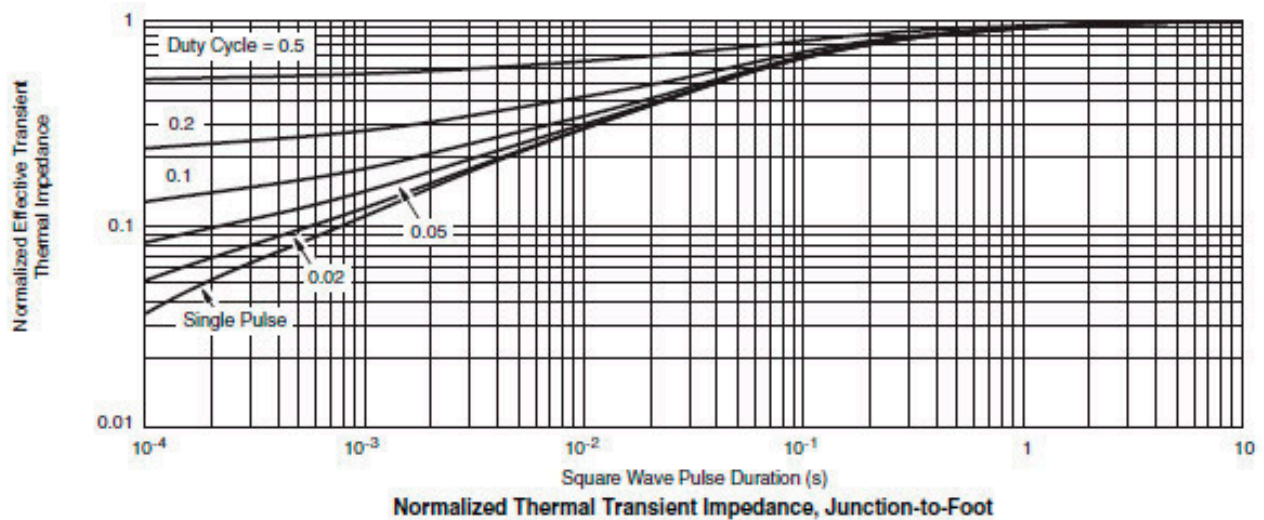
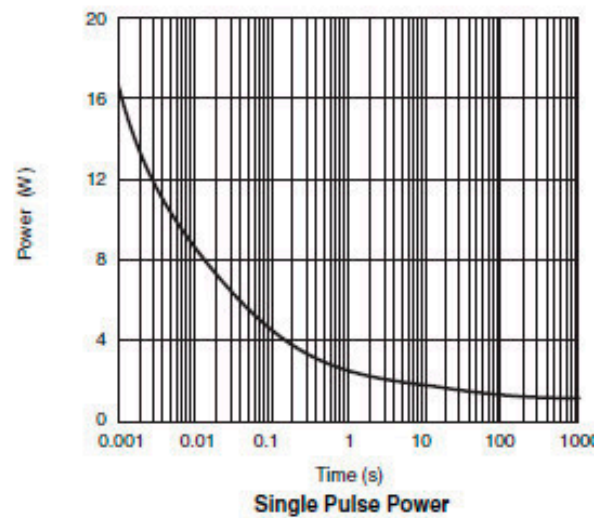
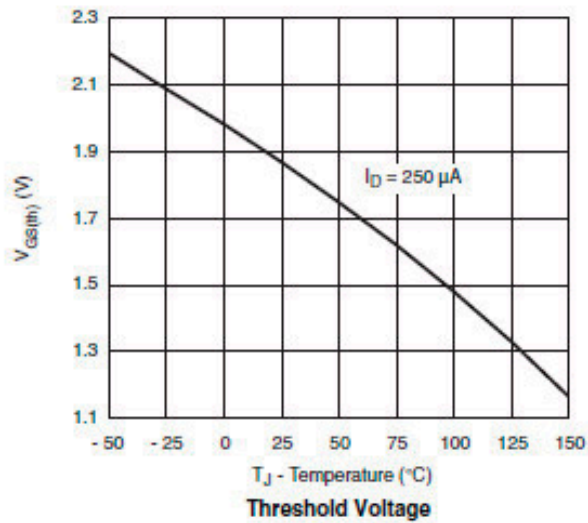
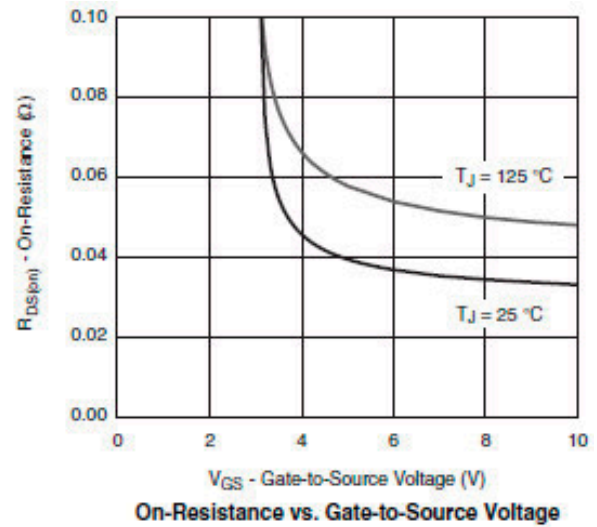
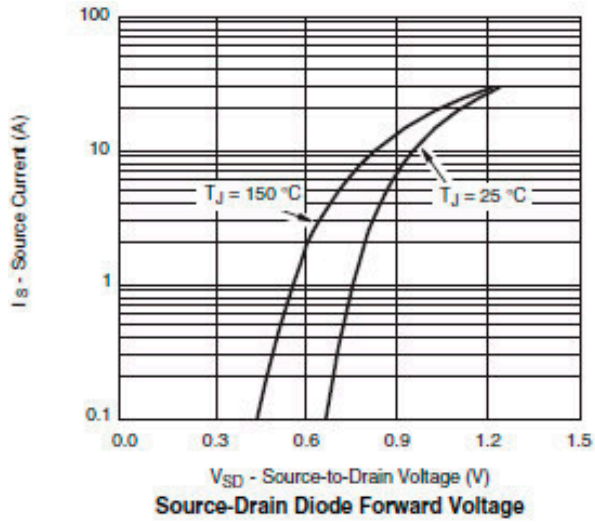
■ 标准特性曲线 (N 沟道)



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■电特性 (P 沟道)

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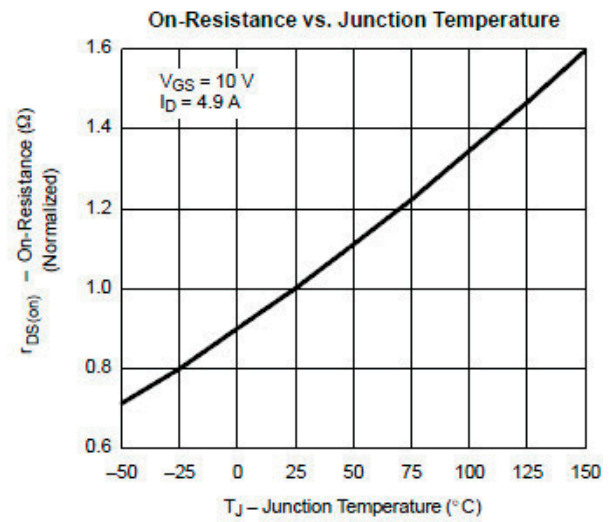
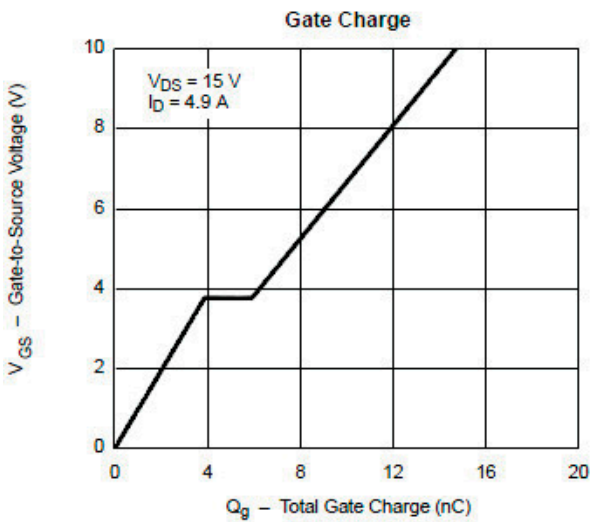
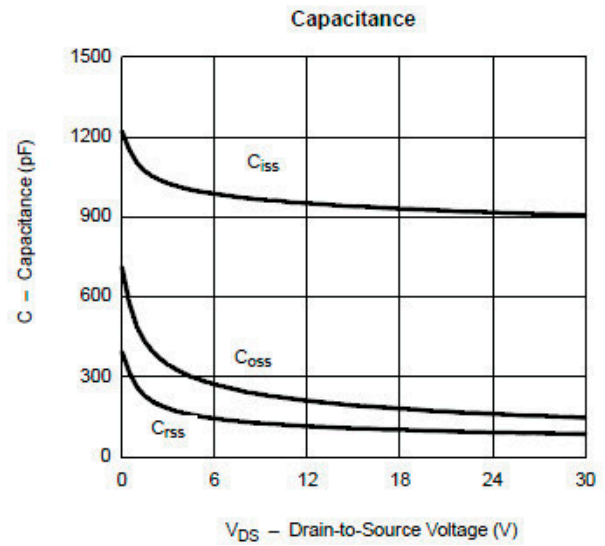
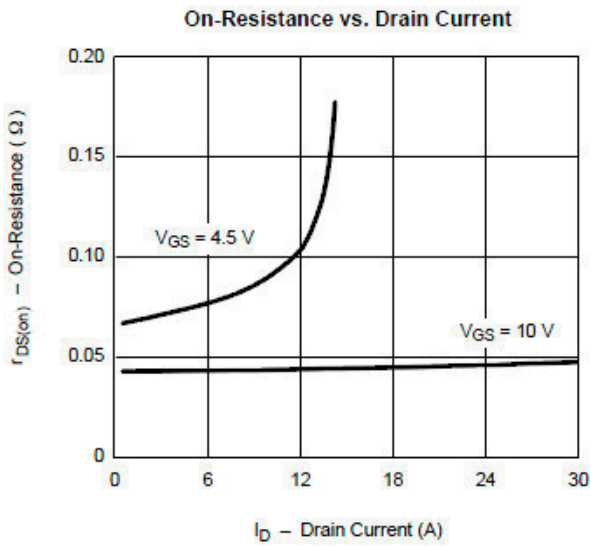
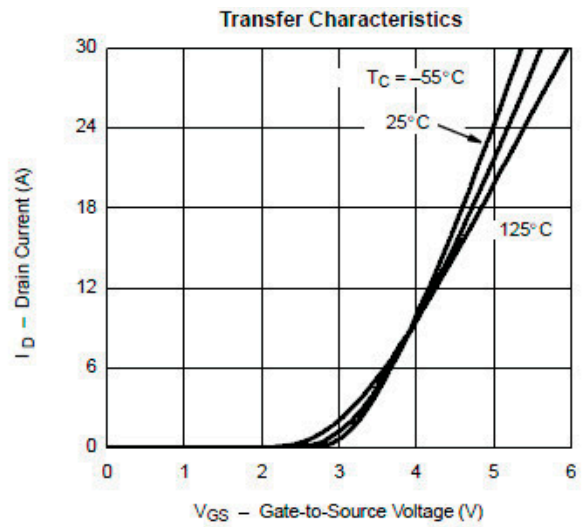
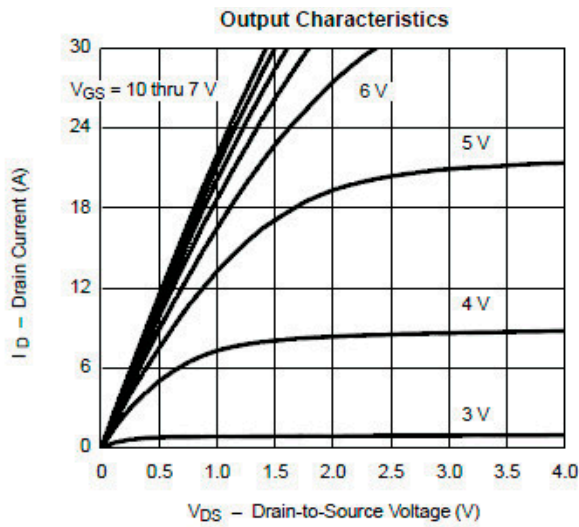
| 项目 | 记号 | 条件 | 最小值 | 典型值 | 最大值 | 单位 |
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| 静态特性 | | | | | | |
| 漏极 - 源极击穿电压 | BVdss | Id=-250μA, Vgs=0V | -30 | | | V |
| 栅极接地时漏极电流 | Idss | Vds=-24V, Vgs=0V Ta=85℃ | | | -1 | μA |
| | | | | | -30 | |
| 栅极漏电流 | Igss | Vds=0V, Vgs=±20V | | | ±100 | nA |
| 栅极阈值电压 | Vgs(th) | Vds=Vgs, Id=-250μA | -1.0 | | -2.0 | V |
| 导通时漏极电流 | Id(on) | Vgs=-10V, Vds≥-5V | -25 | | | A |
| 漏极 - 源极导通电阻 | Rds(on) | Vgs=-10V, Id=-8A | | 50 | 60 | mΩ |
| | | Vgs=-4.5V, Id=-6A | | 70 | 80 | |
| 正向跨导 | Gfs | Vds=-10V, Id=-4.9A | | 10 | | S |
| 二极管正向压降 | Vsd | Is=-1.7A, Vgs=0V | | -0.8 | -1.3 | V |
| 寄生二极管最大连续电流 | Is | | | | -10 | A |
| 动态特性 | | | | | | |
| 输入电容 | Ciss | Vgs=0V, Vds=-15V, f=1MHz | | 500 | | pF |
| 输出电容 | Coss | | | 100 | | pF |
| 反馈电容 | Crss | | | 55 | | pF |
| 开关特性 | | | | | | |
| 总栅极电荷 | Qg | Vgs=-10V, Vds=-15V, Id≡-5.0A | | 10.0 | 18.0 | nC |
| 栅极 - 源极电荷 | Qgs | | | 1.6 | | nC |
| 栅极 - 漏极电荷 | Qgd | | | 3.0 | | nC |
| 导通延迟时间 | td(on) | Vgs=-10V, Vds=-15V Id≡-1.0A, RL=15Ω Rgen=6Ω | | 8 | 18 | ns |
| 导通上升时间 | tr | | | 8 | 18 | ns |
| 关闭延迟时间 | td(off) | | | 25 | 50 | ns |
| 关闭下降时间 | tf | | | 25 | 35 | ns |

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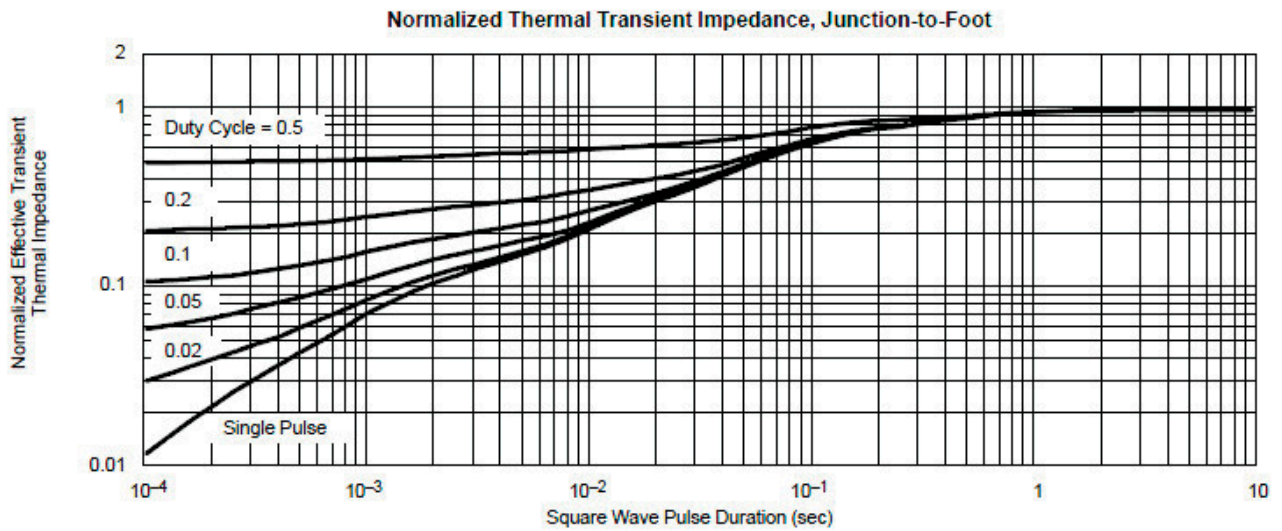
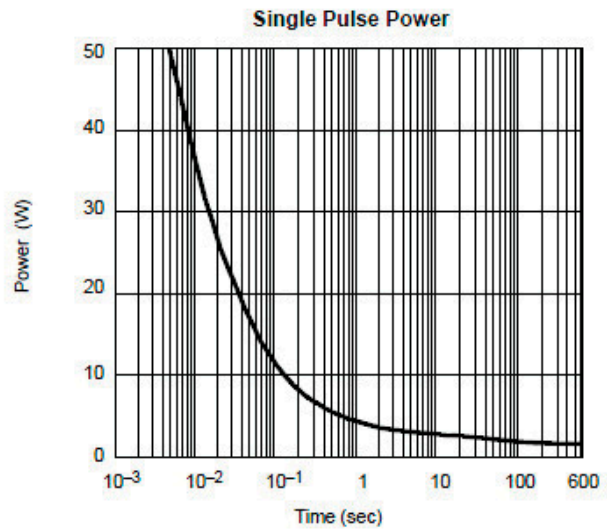
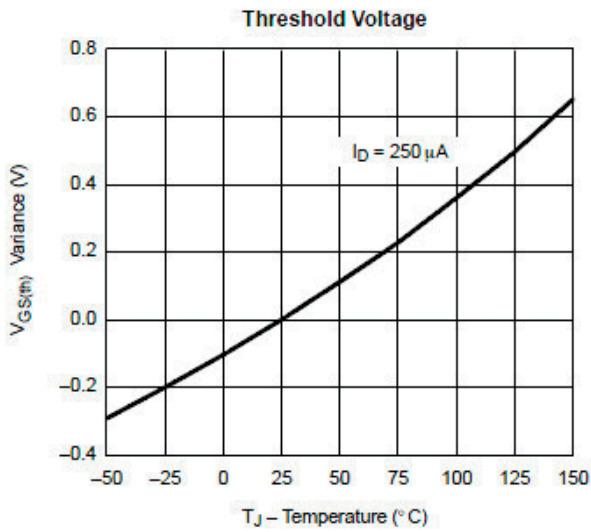
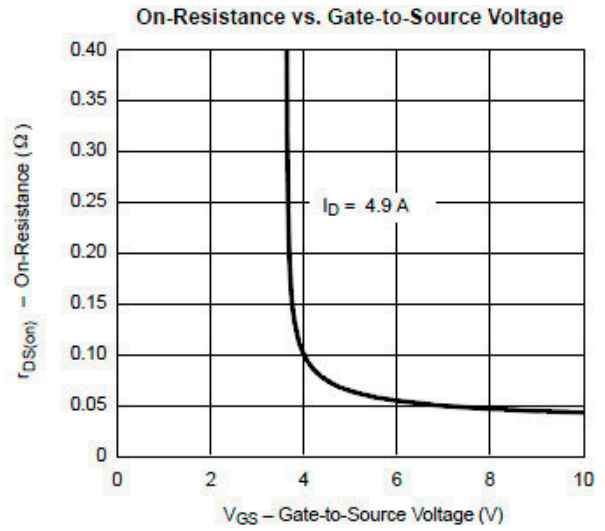
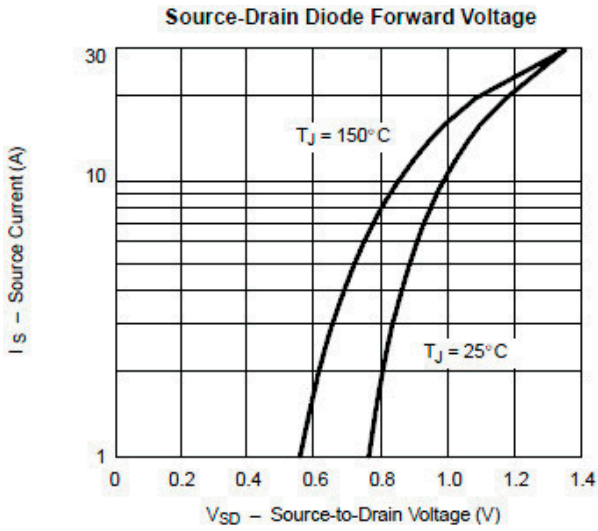
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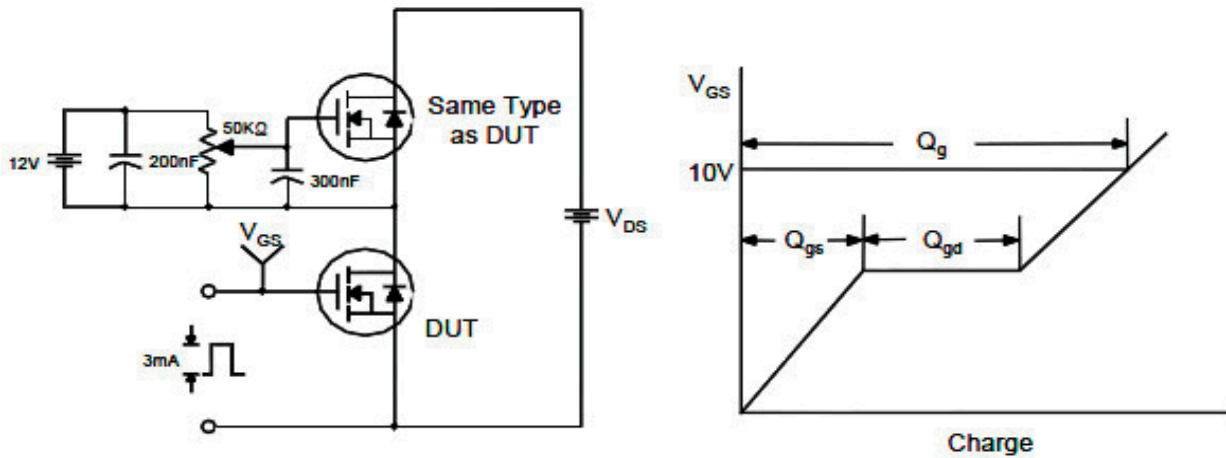
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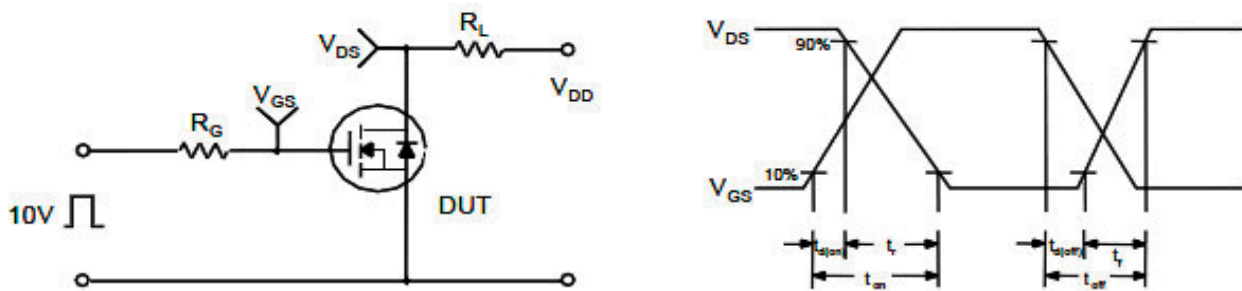
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